OHIO AGRICULTURAL EXPERIMENT STATION
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Progress Report: 1944 Post Service Life Tests

by

R. L. Sarles

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This report presents post condition data and some service life figures obtained from field service tests of nine years standing at Wooster for three species of wood treated by three methods with two wood preservatives.

In 1944 the Forestry Department in cooperation with the Ohio Division of Forestry and several interested industrial concerns initiated an experimental project to determine the lasting qualities of different species of wood under different preservative treatments when in contact with the soil (Figure 1).

The three species of wood used as posts in this study are American elm, shortleaf pine, and soft maple. The round posts were peeled and seasoned six months prior to actual treating. Most of the 306 posts used in the study ranged within the diameter limits of 4.0 to 6.0 inches small end inside bark.

Two principal wood preservatives were used in treating the posts, i.e., creosote oil and copper naphthenate. The preservatives were applied under competent technical supervision by three methods, i.e., pressure (standard AWPA), hot-cold open tank, and 15-second dip. The hot-cold open tank and dip treated posts received butt treatment only. Untreated controls of each species were also part of the testing.

This year is the tenth that these posts have been in the ground, for the most part, a well drained, Wooster silt-loam site.

The posts have received annual inspection of ground line and top condition since 1947 by personnel of the Experiment Station with observers from Koppers Co. and Nuodex Products Co., Inc. present. Two of these inspections including the most recent (May 1953) have been of the entire post removed from the ground and closely examined from top to bottom. All grades have been assigned on the basis of the following grading system. For an evaluation of post conditions for any year the indicated percentage values were assigned each grade and these averaged for each species and treatment combination.

Post Grading System

Ground Line			Post Top		
Condition	Grade	% Value	Condition	Grade	% Value
Sound-no decay	1	100	Sound-no decay	G	100
Slight decay	2	75	Positive decay	M	50
Medium decay	3	50	Severe decay with top disintegration	B	0
Severe decay	4	25			
Failure	5	0			

On the basis of the last inspection, the following data are presented relative to present post conditions.

Index of Post Conditions

(Each species and treatment combination represents 12 posts)

Treatment	Post species					
	Shortleaf pine		American elm		Soft maple	
	Ground Line %	Top %	Ground Line %	%	Ground Line %	Top %
Controls	2.1	0	*		**	
Creosote-Pressure	98.0	100.0	72.9	100.0	81.2	100.0
Creosote-Hot-cold	93.7	41.7	70.8	0	66.7	16.7
Creosote-15-sec. dip	6.2	8.3	****		***	
0.5% Cu. Nap.-Pressure	87.5	95.8	66.7	100.0	66.7	100.0
0.5% Cu. Nap.-Hot-cold	45.8	25.0	60.4	16.7	62.5	16.7
1.8% Cu. Nap. -15-sec. dip	8.3	4.2	16.7	0	2.1	8.3

* Service life untreated American elm - 57.8 months or 4.8 years
** " " " soft maple - 60.3 months or 5.0 years
*** " " 15-sec. dip creosoted soft maple - 69.8 months or 5.8 years
**** " " " " " American elm - 80.6 months or 6.7 years

Important results to date:

(1) Full length preservative treatment is a must with shortleaf pine, American elm, and soft maple to insure sound post top condition. Post top condition of full length treated posts is excellent for all species and preservatives (Figure 2).

(2) No pressure or hot-cold bath treated posts with either preservative have failed at the ground line over the nine-year period.

(3) A 15-second dip treatment does not yield increased service life of sufficient amount to be considered of value for post treating. Hence such practice is not recommended for post treating.

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Butt treated American elm posts in foreground badly deteriorated at the top as compared with full length treated (pressure creosote) shortleaf pine posts in background. The elm posts are actually failures since they would no longer hold fencing securely, though the ground line is sound.

Four foot experimental posts set in 1944 at O.A.E.S., Wooster, Ohio to test the lasting qualities of various species of wood under different preservative treatments when in contact with the soil.